

L Number	Hits	Search Text	DB	Time stamp
2	111	spending adj limit	USPAT	2003/05/21 13:54
3	15	((spending adj limit) and (alternative or alternate) adj3 (selection or choice or option or product or service or item))	USPAT	2003/05/21 14:59
4	96	((spending adj limit) not ((spending adj limit) and (alternative or alternate) adj3 (selection or choice or option or product or service or item)))	USPAT	2003/05/21 14:21
5	2	6298441.URPN.	USPAT	2003/05/21 14:59
6	10154	((alternative or alternate) adj3 (selection or choice or option or product or service or item))	USPAT	2003/05/21 15:00
7	8042	((705/\$).CCLS.)	USPAT	2003/05/21 15:00
8	361	((alternative or alternate) adj3 (selection or choice or option or product or service or item)) and ((705/\$).CCLS.)	USPAT	2003/05/21 15:01
9	936	((705/26,27).CCLS.)	USPAT	2003/05/21 15:01
10	75	((alternative or alternate) adj3 (selection or choice or option or product or service or item)) and ((705/26,27).CCLS.)	USPAT	2003/05/21 15:26
11	11	5878401.URPN.	USPAT	2003/05/21 15:23
12	244	upsell or upsale or up adj (sell or sale)	USPAT	2003/05/21 15:29
13	64	((upsell or upsale or up adj (sell or sale)) and ((705/\$).CCLS.)	USPAT	2003/05/21 15:30
14	20	("4482976" "4618936" "4760245" "5119295" "5235509" "5241649" "5351186" "5383111" "5408210" "5426282" "5482139" "5513250" "5698834" "5704009" "5758322" "5818909" "5826240" "5926796" "6023688" "6317716").PN.	USPAT	2003/05/21 15:46
15	14	6055513.URPN.	USPAT	2003/05/21 15:47

reviewed all circled

US-PAT-NO: 5878401

DOCUMENT-IDENTIFIER: US 5878401 A

TITLE: Sales and inventory method and apparatus

Joseph
price range
alternative
selections

----- KWIC -----

Abstract Text - ABTX (1):

An apparatus that displays alternative items for items that are out of stock in a store or the like. A request for an item is entered into a sales computer. The computer determines from a database whether the requested item is available. If the item is unavailable, the computer determines alternative items that are available for sale. These available alternative items are interactively displayed for the customer. The alternative items are determined from an alternative item database wherein each item is categorized with alternative items. A mass data storage device stores an image of each alternative item. A method of determining and displaying alternative items includes the steps of: inputting a request for an item; determining the availability of the requested item and alternative items for the requested item if it is unavailable; and interactively displaying the alternative items. An electronic monitoring apparatus for a store includes: a sales computer for entering sales requests; a database for storing the request and associated information on each item ordered; a stock area computer, wherein the request is transmitted from the sales computer to the stock area computer; and a report generation system capable of generating a report selected from the group consisting of Items Requested, Items Delivered, Items Returned, Items Sold, Requests by SKU, Sales Person Report, Sales Person Summary Report, Time of Requests Analysis, and Time of Sales Analysis.

Brief Summary Text - BSTX (3):

The present invention relates generally to sales and inventory management systems, and more particularly to a sales system that enables customers to view alternative items in the event the customer orders an item that is out of stock, and to a sales and inventory system that enables tracking of requests

price
alt.

for items in a store in which the sales floor is remote from the stockroom.

Brief Summary Text - BSTX (9):

The present invention is an apparatus that displays alternative items for items that are out of stock in a store or the like. Means is provided for inputting a request for an item for viewing or purchasing the item. A computer determines from a database whether the requested item is available. If the item is unavailable, means is provided for determining alternative items for the requested item and for determining whether the alternative items are available. The available alternative items are interactively displayed for the customer.

Brief Summary Text - BSTX (10):

The means for inputting a request is a computer workstation having a computer controller. The means for determining the availability of the requested item includes an inventory database, wherein the computer controller searches the inventory database to determine the availability of the item. The means for determining alternative items for the requested item includes an alternative item database wherein each item is categorized with alternative items. The computer controller searches the alternative item database to determine alternative items if the requested item is unavailable.

Brief Summary Text - BSTX (11):

The means for determining the alternative items that are available includes a computer controller that determines from the inventory database the items that are available for each alternative item. The means for interactively displaying the alternative items includes mass data storage means, which stores an image of each alternative item, with the computer controller displaying each desired alternative item on the computer workstation.

Brief Summary Text - BSTX (12):

A method of determining and displaying alternative items comprises the steps of:

Brief Summary Text - BSTX (15):

determining alternative items for the requested item if the requested item is unavailable;

Brief Summary Text - BSTX (16):

determining alternative items for the requested item that are available; and

Brief Summary Text - BSTX (17):

interactively displaying such alternative items.

Brief Summary Text - BSTX (18):

The step of determining the availability of the requested item includes searching an inventory database to determine the availability of the item. The step of determining alternative items for the requested item includes searching an alternative item database in which each item is categorized with alternative items. The step of interactively displaying such alternative items includes retrieving an image of each alternative item from data storage means and displaying each desired alternative item on a computer workstation.

Drawing Description Text - DRTX (2):

FIG. 1 is a schematic of a retail store with the Alternative Style Selection System of the present invention.

Drawing Description Text - DRTX (5):

FIG. 4 is a flow diagram showing operation of the Alternative Style Selection System of the invention.

Detailed Description Text - DETX (9):

If the selected size of the selected style is out of stock, an Alternative Sneaker Selection System is activated. As previously discussed, each item in the store includes a 7-digit SKU number that identifies the item. In a preferred embodiment, the first three digits of the SKU are referred to as the "class" of the item. All items in the store are categorized into classes by the type of item.

Detailed Description Text - DETX (14):

Once a size and style have been selected by the customer, and it has been determined that the selected item is not in stock, sales floor computer 2 or server computer 4 searches the lookup table of alternative classes, which is preferably a FoxPro.sub..TM. database, to determine alternative styles for the

customer's selection. The alternative styles that are displayed may be determined using any desired search criteria, such as the vendor. In a preferred embodiment, only items from the same vendor are displayed as alternatives.

Detailed Description Text - DETX (15):

To perform such a search for alternative items, the computer accesses the INVENTORY Database using the SKU for the selected item, and determines the VENDOR CODE for the item, which represents the name of the vendor of the item.

The computer then uses the class number for the selected item and determines related classes from the look-up table. Using the INVENTORY database, the computer then searches for those items in the same class as the selected item with the same VENDOR CODE as the selected item and for those items in the alternative classes that have the same VENDOR CODE. The resultant list of items is sorted by price.

Detailed Description Text - DETX (16):

The sorted list of alternative items appears on the sales floor computer 2 with the cursor positioned nearest to the price of the selected item that was out of stock. Thus, what appears on the sales floor computer is a list of alternative styles by the same vendor sorted by price.

Detailed Description Text - DETX (19):

As discussed above, the alternative style selection system is activated only if a selected style is out of stock. If the selected style is in stock, a REQUEST database is accessed which includes fields for REQUEST NUMBER, SKU, VENDOR CODE, SIZE REQUESTED, SALESPERSON, STATUS, DATE, REQUEST TIME, LOCATION, PRICE, TIME DELIVERED, TIME RETURNED and TIME SOLD. When an order for a particular style is entered into sales floor computer 2 by a sales person, information on the SKU, SIZE REQUESTED, and SALESPERSON are entered into the computer. Using this information, the order is assigned a REQUEST NUMBER, and the REQUEST database is updated with the information that the sales person entered and other information from the INVENTORY database for the item ordered.

An order or pick ticket is printed at a stockroom computer. A typical pick ticket, as shown in FIG. 5, includes the SALESPERSON, i.e., Beverly P., the name of the vendor, i.e., Nike, Inc., which is derived from the VENDOR CODE, the LOCATION, i.e., I-44-45, the SKU, the SIZE REQUESTED, i.e., 13, the DATE, the REQUEST TIME, and the REQUEST NUMBER, i.e., 491570. This information is all stored in the REQUEST database.

Detailed Description Text - DETX (22):

As shown in FIG. 6, a Request Status Report menu may be accessed by the store manager from which a number of different types of reports may be generated using the REQUEST database on the various aspects of the operation of the sales floor and stockroom. Generally speaking, each of the reports described herein may be generated for any desired period of time. FIG. 7 shows a report that may be generated showing the items that were requested during any desired time frame. As indicated above, when an item is out of stock the Alternative Style Selection System is activated. Nonetheless, when the initial request for the item out of stock is entered into the computer, this request is recorded in the REQUEST database. In this manner, customer interest in out-of-stock items may be recorded. Therefore, even though the SIZE database indicates that an item is out of inventory, the Items Requested Report (FIG. 7) will indicate customer interest in such items for cross-checking, ordering and inventory control purposes.

Claims Text - CLTX (1):

1. An alternative item displaying apparatus which comprises:

Claims Text - CLTX (5):

an alternative style database wherein each item is categorized by style and each style is categorized with alternative styles, the computer controller determining the style of the requested item and searching the alternative style database to determine alternative styles for the requested item if the requested item is unavailable;

Claims Text - CLTX (6):

means for determining the availability of alternative items having the

alternative styles from the inventory database; and

Claims Text - CLTX (7):

means for interactively displaying such available alternative items or the availability of such alternative items.

Claims Text - CLTX (8):

2. The alternative style displaying apparatus according to claim 1 wherein the means for determining the alternative items that are available and for interactively displaying such alternative items comprises the computer controller determining from the inventory database the items that are available for each alternative style and interactively displaying the items of the alternative styles or the availability of the items of the alternative styles.

Claims Text - CLTX (9):

3. The alternative style displaying apparatus according to claim 2 wherein the means for interactively displaying the items of the alternative styles comprises data storage means comprising an image of each item of the alternative styles, the computer controller displaying each desired item of the alternative items on the computer workstation.

Claims Text - CLTX (10):

4. The alternative style displaying apparatus according to claim 1 wherein the means for interactively displaying such available alternative items comprises data storage means comprising an image of each alternative item, the computer controller displaying each desired alternative item on the computer workstation.

Claims Text - CLTX (11):

5. A method of determining and displaying alternative items comprising the steps of:

Claims Text - CLTX (14):

providing an alternative style database wherein each item is categorized by style and each style is categorized with alternative styles:

Claims Text - CLTX (15):

determining the style of the requested item and searching the alternative style database to determine alternative styles for the requested item if the requested item is unavailable;

Claims Text - CLTX (16):

determining from the inventory database the availability of alternative items having the alternative styles; and

Claims Text - CLTX (17):

selectively displaying or indicating the availability of such available alternative items.

Claims Text - CLTX (18):

6. The alternative item displaying method according to claim 5 wherein the step of interactively displaying such alternative items comprises retrieving an image of each alternative item from data storage means and displaying each desired alternative item on a computer workstation.

Current US Cross Reference Classification - CCXR (1):

705/27



US005878401A

United States Patent [19][11] **Patent Number:** **5,878,401****Joseph**[45] **Date of Patent:** **Mar. 2, 1999**[54] **SALES AND INVENTORY METHOD AND APPARATUS**

"Techno-Shop," Home Fashions Magazine, p. 18. Apr. 1993.

[76] Inventor: **Joseph Joseph**, 470 Kent Ave.,
Brooklyn, N.Y. 11211*Primary Examiner*—Emanuel Todd Voeltz*Assistant Examiner*—Alexander Kalinowski*Attorney, Agent, or Firm*—David M. Klein; Shearman & Sterling[21] Appl. No.: **599,184**[22] Filed: **Feb. 9, 1996**[51] **Int. Cl.⁶** **G06F 17/60; G07G 1/14**[52] **U.S. Cl.** **705/22; 705/27**[58] **Field of Search** **705/22, 21, 16,**
705/26, 27[57] **ABSTRACT**

An apparatus that displays alternative items for items that are out of stock in a store or the like. A request for an item is entered into a sales computer. The computer determines from a database whether the requested item is available. If the item is unavailable, the computer determines alternative items that are available for sale. These available alternative items are interactively displayed for the customer. The alternative items are determined from an alternative item database wherein each item is categorized with alternative items. A mass data storage device stores an image of each alternative item. A method of determining and displaying alternative items includes the steps of: inputting a request for an item; determining the availability of the requested item and alternative items for the requested item if it is unavailable; and interactively displaying the alternative items. An electronic monitoring apparatus for a store includes: a sales computer for entering sales requests; a database for storing the request and associated information on each item ordered; a stock area computer, wherein the request is transmitted from the sales computer to the stock area computer; and a report generation system capable of generating a report selected from the group consisting of Items Requested, Items Delivered, Items Returned, Items Sold, Requests by SKU, Sales Person Report, Sales Person Summary Report, Time of Requests Analysis, and Time of Sales Analysis.

[56] **References Cited****U.S. PATENT DOCUMENTS**

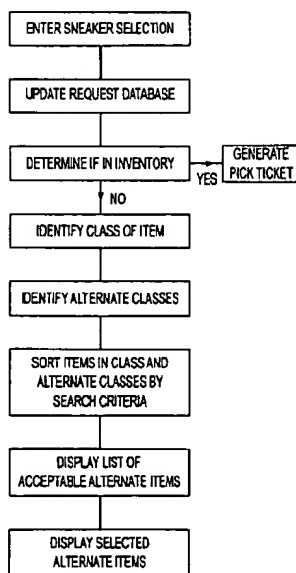
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6 Claims, 9 Drawing Sheets

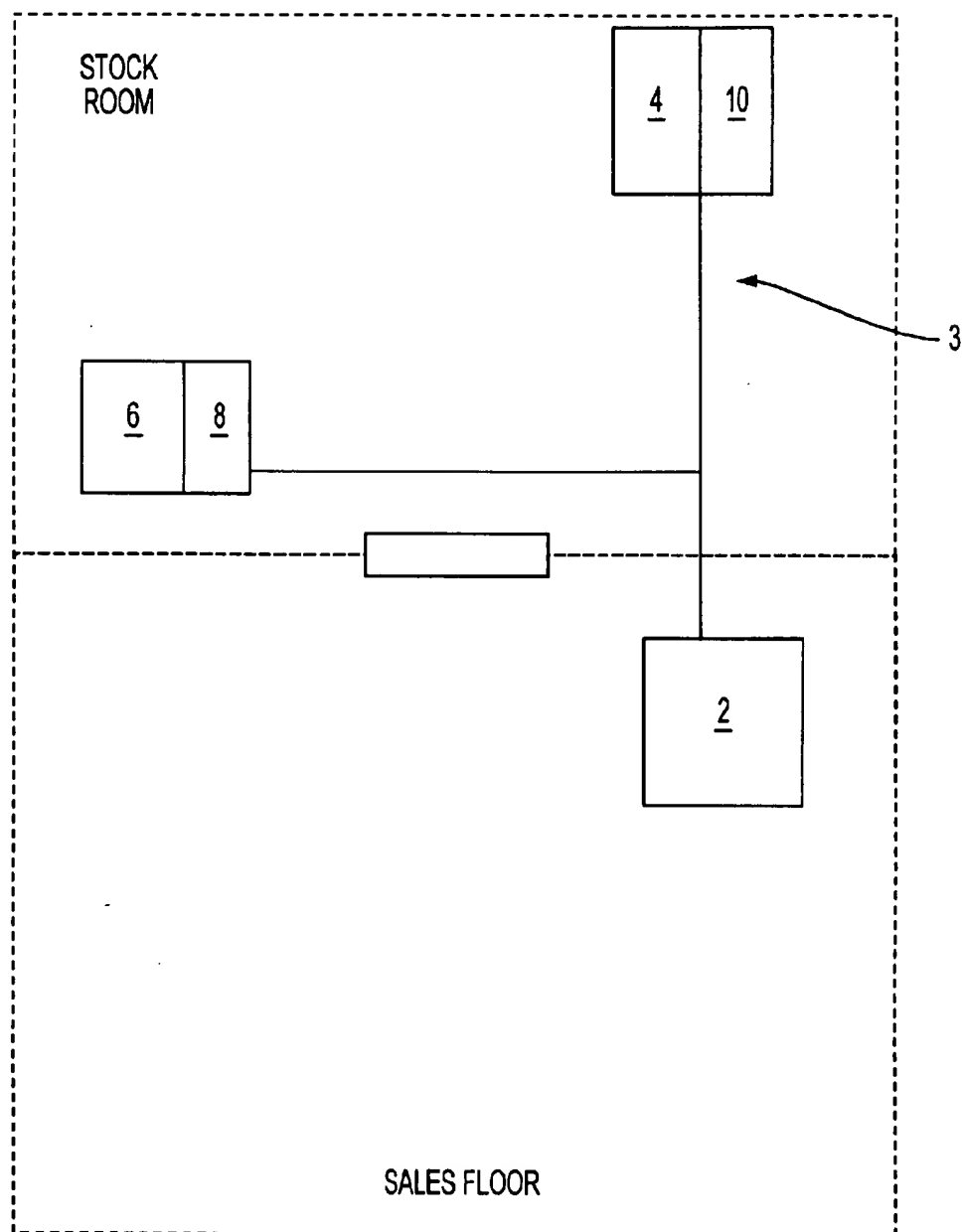


FIG. 1

SKU	RECEIVE00	...	RECEIVE14	SOLD00	...	SOLD14
3242861	16		12	4		1
8132954	8		2	9		2

FIG. 2

SIZE CONVERSION DATABASE					
SIZE RANGE	SIZE BRACKET 00	SIZE BRACKET 01	SIZE BRACKET 02	...	SIZE BRACKET 14
01	1	1 ½	2	...	8
02	6	6 ½	7	...	13
03	40	41	42	...	54

FIG. 3

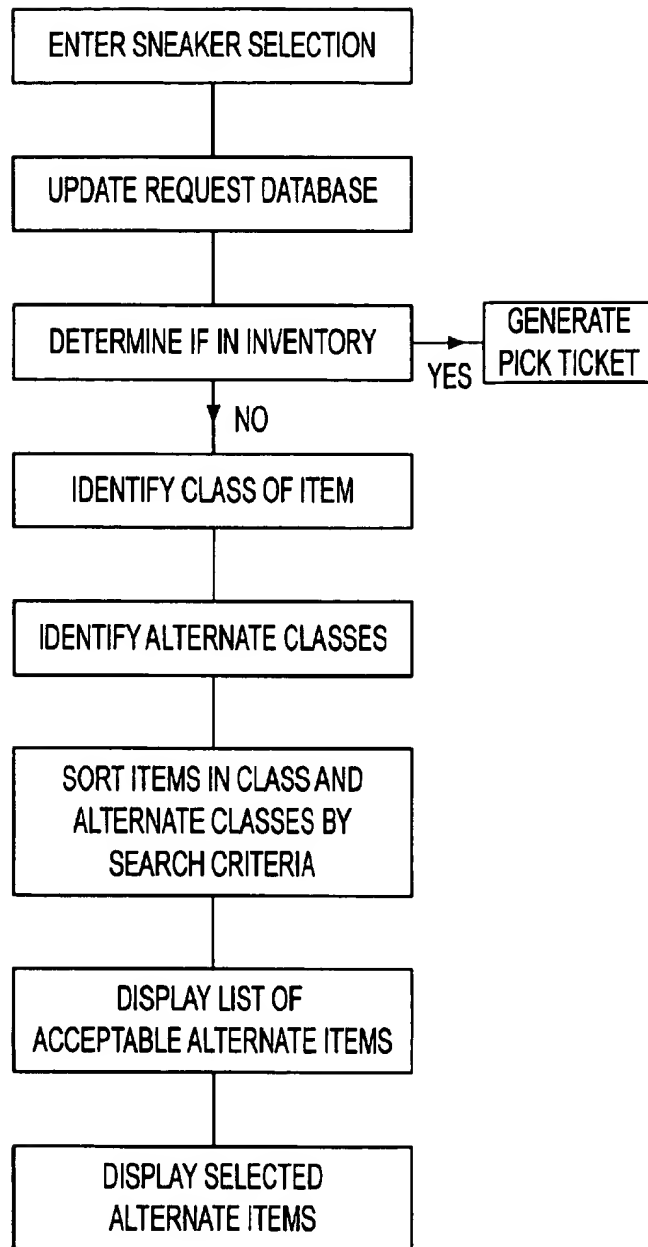


FIG. 4

BEVERLY P.
NIKE INC. (13)
I-44-45 04/12/95
664-0297-9014-5 19:17 0 491570 0

FIG. 5

DATE	STAT	REQ NUM	SKU	SIZE	BIN LOCATION	REQ BY	TIME REQ
12/08/95	01	698117	646-0020-	3	F-36	12RZ	09:31:34
12/08/95	01	698119	835-0113-	4	D-25	12J3	09:39:33
12/08/95	01	698120	835-0103-	7	C-14	12J3	09:40:49
12/08/95	01	698122	646-0058-	0	G-16	12J3	09:42:54
12/08/95	01	698128	646-0068-	8	J-43	12J3	09:57:28

FIG. 7

- 1 - REQUEST
- 2 - PICK TICKET
- 3 - DELIVER
- 4 - RETURN
- 5 - NO STOCK
- 6 - SOLD
- 7 - ALL
- 8 - SUMMARY
- 9 - BY SKU

ESC - EXIT

FIG. 6

DATE	STAT	REQ #	SKU	SIZE	BIN LOCATION	REQ BY	TIME REQ	DEL. LAPS	DEL. AGE
12/08/95	03	698163	863-0038-9004-5	3	KK-32	12BE	11:10:00	:07	:49:14
12/08/95	03	698192	836-0158-9006-9	5+	C-25	12SU	11:43:00	:26	:16:42
12/08/95	03	698207	836-0229-0106-1	10+	D-47	12F3	11:55:00	:29	:04:37

FIG. 8

DATE	STAT	REQ #	SKU	SIZE	BIN LOCATION	REQ BY	TIME REQ	DEL. LAPS	RET. LAPS
12/08/95	04	698116	834-0264-9006-0	5+	D-48	12J3	09:27	:29	:12:43
12/08/95	04	698114	312-9956-9004-3	7+	I-42-43	12J3	09:17	:01:10	:22:11
12/08/95	04	698118	863-0018-9004-0	2+	C-35	12J3	09:36	:52	:05:18
12/08/95	04	698124	755-0101-9009-5	9	AA-51	12J3	09:44	:31	:03:51
12/08/95	04	698125	643-0147-1013-8	12	B-31	12J3	09:47	:49	:02:23

FIG. 9

DATE	STAT	REQ NUM	SKU	SIZE	BIN LOCATION	REQ BY	TIME REQ	TIME SOLD
12/08/95	06	698115	312-9956-9005-3	8	I-42-43	12J3	09:20:12	09:24
12/08/95	06	698126	643-0147-1011-8	11	8-31	12J3	09:50:29	09:25
12/08/95	06	698129	646-0057-9013-2	12	F-11	12J3	09:58:15	10:07
12/08/95	06	698127	754-1200-0109-4	9	DD-51-53	12J3	09:55:56	10:08
12/08/95	06	698121	863-0018-9005-0	3	C-35	12J3	09:42:31	10:08

FIG. 10

FOR: 12J3 KIMBERLY SMITH

DATE	REQ NUM	SKU	VENDOR STYLE	TIME REQ	PRICE \$
12/08/95	698115	312-9956-9005-3	10066	9:20:12	79.99
12/08/95	698121	863-0018-9005-0	1511151/91	9:42:31	39.99
12/08/95	698126	643-0147-1011-8	19165	9:50:29	24.99
12/08/95	698127	754-1200-0109-4	2-71	9:55:56	49.99

TOTAL AMOUNT: \$194.96

FIG. 12

SKU: 863-0018 DESC.: KID TRAINER MARAUDER WHT/SPRUC LOCATION: C-35
 VENDOR: 0492 NIKI INC. VENDOR STYLE: 1511151/91

DATE	TIME	REQ. #	SALESPERSON	SIZE	STATUS	DATE	TIME
12/08/95	09:42:31	698121	12J3 KIMBERLY SMITH	3 06	SOLD	12/08/95	10:08
12/08/95	09:36:44	698118	12J3 KIMBERLY SMITH	2+04	RETURNED	12/08/95	09:42:54
12/02/95	10:27:59	694149	12BE MARIA JAMES	3 04	RETURNED	12/02/95	10:35:03
12/01/95	15:53:51	693800	12R6 DORIS G DOUGLAS	1 06	SOLD	12/01/95	16:06

FIG. 11

CODE	NAME	T1. REQ.	QTY. SOLD	AMOUNT \$	HOURS	RATIO	AVG. \$
12BE	MARIA SMITH	8	4	134.96		2.00	33.74
12F3	DAVID JONES	3	1	24.99		3.00	24.99
12H8	IMARA PAUL	9	4	162.96		2.25	40.74
12J3	KIMBERLY HALL	46	10	454.90		4.60	45.49
12R6	DORIS G. FELICIANO	8	1	14.99		8.00	14.99
	TOTAL:	74.00	20.00	792.80		19.85	159.95

FIG. 13

DAY	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	12PM	TOTAL
FRIDAY	19	34	18	48	96	68	47	56	33	10								553
SATURDAY	10	21	32	54	50	79	59	102	51	58	24	21						561
SUNDAY		0	25	45	36	60	80	40	44	27	9							366
MONDAY	7	28	24	30	39	39	68	72	56	42	19	3						427
TUESDAY	4	15	23	28	55	38	54	29	50	57	15							368
WEDNESDAY	17	32	48	58	43	54	31	68	45	37	24							457
THURSDAY	2	20	26	34	42	53	35	55	59	49		4						435

FIG. 14

DAY	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	12PM	TOTAL
FRIDAY	8	18	8	24	39	31	22	25	24	21	13	4						553
SATURDAY	6	14	13	24	23	30	34	44	18	26	10	8						561
SUNDAY		0	14	21	17	24	34	16	19	8	2							366
MONDAY	4	15	12	16	14	17	35	34	21	23	9	2						427
TUESDAY	1	7	11	19	31	18	20	12	20	25	9							368
WEDNESDAY	10	25	21	27	31	20	17	38	20	17	13	3						457
THURSDAY	2	8	5	21	23	25	13	19	19	28	29	4						435

FIG. 15

SALES AND INVENTORY METHOD AND APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to sales and inventory management systems, and more particularly to a sales system that enables customers to view alternative items in the event the customer orders an item that is out of stock, and to a sales and inventory system that enables tracking of requests for items in a store in which the sales floor is remote from the stockroom.

2. Description of the Related Art

One common problem that is faced by retail stores, especially those such as shoe stores, in which over 500 shoe and sneaker styles may be on display at any given time, is ensuring that all items that are on display are in the store's inventory. If displayed items are not in inventory, customer dissatisfaction and loss of sales may result. Normally, if a desired shoe style is out of inventory, the customer will either (i) return to the displays and select another style, which may itself be out of inventory, or (ii) go to a different store, each of which results in customer dissatisfaction. Accordingly, it would be desirable to have a system that, once a sales person determines from a sales computer that a selected style of shoe is out of stock, enables the customer to select from alternative styles of shoes similar to those originally selected by the customer, and to view the shoes on the sales computer, without the necessity of returning to the store display.

Various electronic catalog systems are known in the art. Such catalogs systems are shown, for example, in U.S. Pat. Nos. 5,319,542; 4,992,940; 3,757,037; 5,206,804; 5,367,627; 5,291,395; and 4,984,155. None of these systems, however, provides a method of and apparatus for enabling a store customer to view alternative styles similar to a selected style that is out of inventory so as to avoid customer dissatisfaction.

In shoe and sneaker stores, when a style is selected by a customer in a particular size, the selected pair of shoes or sneakers is retrieved from a stockroom so that the customer may try the shoes on. While in some retail establishments the salespersons themselves retrieve the desired shoes from stock, in other stores an order is transmitted to a stockroom where the order is picked by a stock person and transmitted to the sales floor. The productivity of the stockroom personnel is critical in maintaining customer satisfaction in that if a customer must wait too long for the desired shoes to be retrieved, the customer may leave. Also, it is important to monitor the movement of shoes between the sales floor and the stockroom to prevent shoplifting and to monitor inventory. Accordingly, it would be desirable to have a system wherein the productivity of the salespersons and the stockroom personnel may be measured and in which the movement of items between the sales floor and stockroom is carefully monitored.

SUMMARY OF THE INVENTION

The present invention is an apparatus that displays alternative items for items that are out of stock in a store or the like. Means is provided for inputting a request for an item for viewing or purchasing the item. A computer determines from a database whether the requested item is available. If the item is unavailable, means is provided for determining alternative items for the requested item and for determining

whether the alternative items are available. The available alternative items are interactively displayed for the customer.

The means for inputting a request is a computer workstation having a computer controller. The means for determining the availability of the requested item includes an inventory database, wherein the computer controller searches the inventory database to determine the availability of the item. The means for determining alternative items for the requested item includes an alternative item database wherein each item is categorized with alternative items. The computer controller searches the alternative item database to determine alternative items if the requested item is unavailable.

The means for determining the alternative items that are available includes a computer controller that determines from the inventory database the items that are available for each alternative item. The means for interactively displaying the alternative items includes mass data storage means, which stores an image of each alternative item, with the computer controller displaying each desired alternative item on the computer workstation.

A method of determining and displaying alternative items comprises the steps of:

- inputting a request for an item for viewing or purchasing the item;
- determining the availability of the requested item;
- determining alternative items for the requested item if the requested item is unavailable;
- determining alternative items for the requested item that are available; and
- interactively displaying such alternative items.

The step of determining the availability of the requested item includes searching an inventory database to determine the availability of the item. The step of determining alternative items for the requested item includes searching an alternative item database in which each item is categorized with alternative items. The step of interactively displaying such alternative items includes retrieving an image of each alternative item from data storage means and displaying each desired alternative item on a computer workstation.

An electronic monitoring apparatus for a store having a sales floor on which items for sale are displayed and are ordered from sales personnel, and a stock area in which stock for the items for sale is stored and from which items ordered are retrieved and transferred to the sales floor, includes:

- sales computer means for entering a request for items ordered;
- a database for storing the request and associated information on the item ordered for each request;
- a stock area computer having a printer which prints a pick ticket having information on the item ordered, wherein the request is transmitted from the sales computer to the stock area computer; and
- a report generation system capable of generating a report selected from the group consisting of Items Requested, Items Delivered, Items Returned, Items Sold, Requests by SKU, Sales Person Report, Sales Person Summary Report, Time of Requests Analysis, and Time of Sales Analysis.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic of a retail store with the Alternative Style Selection System of the present invention.

FIG. 2 is a table showing the SIZE database.

FIG. 3 is a table showing the SIZE CONVERSION database.

FIG. 4 is a flow diagram showing operation of the Alternative Style Selection System of the invention.

FIG. 5 is a diagram of a typical pick ticket.

FIG. 6 is a schematic of a Request Status Report input screen.

FIG. 7 is a table showing an Items Requested Report.

FIG. 8 is a table showing an Items Delivered Report.

FIG. 9 is a table showing an Items Returned Report.

FIG. 10 is a table showing an Items Sold Report.

FIG. 11 is a table showing a Requests Searched by SKU Report.

FIG. 12 is a table showing a Sales Person Report.

FIG. 13 is a table showing a Sales Person Summary Report.

FIG. 14 is a table showing a Time of Requests Analysis Report.

FIG. 15 is a table showing a Time of Sales Analysis Report.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is an apparatus for use in retail stores or the like. One typical application for the invention is in shoe or sneaker stores, in which hundreds of shoe and/or sneaker designs may be on display at any given time. While the invention will be described with respect to a retail store for shoes and/or sneakers, it will be appreciated that the invention is applicable to any appropriate retail store and to any other appropriate application, including warehouse applications.

As shown in FIG. 1, located on the sales floor of the store is a sales computer 2 which is preferably an IBMTM compatible computer with an SVGA monitor. Sales computer 2 is preferably on a Novell[™] or other computer network 3 running Microsoft Windows[™] 95 and is attached via the network to an IBM PC[™] compatible server computer 4 which is preferably located in an area remote from the sales floor. The server computer 4 preferably operates the MS-DOS operating system, but may operate using any other appropriate operating system. Sales floor computer 2 preferably includes a data entry device, e.g., a keyboard, track ball, mouse and/or a touch screen, and a video card that enables the display of true color, i.e., greater than 16 million colors. The aforementioned hardware configuration is not intended to limit the scope of the invention, and those skilled in the art will appreciate modifications thereof.

Operating on server computer 4 is a database that is preferably programmed in FoxPro[™]. Sales floor computer 2 communicates with the database on server computer 4 via the computer network, and operates its own database also programmed in FoxPro[™]. While these databases will be described in detail below, the structure of the overall database is not intended to limit the scope of the invention. It is foreseen that databases having different structures could be implemented which perform the same functions as those described herein. It will be appreciated that in addition to the database fields described below, each database may contain other fields which are not part of the invention.

As shown in FIG. 2, the database includes a SIZE database which has the fields SKU, which is a seven-digit number that is unique to each style of item in the store,

RECEIVE00 . . . RECEIVE14, and SOLD00 . . . SOLD14, wherein 00 . . . 14 represent the 15 available sizes that have been programmed into the system that are available for each SKU. Sizes 00 . . . 14 are not literal sizes but are representative of actual sizes that may be determined from a PRODUCT database and a SIZE CONVERSION database, as discussed below. If a particular item has more than 15 sizes, it will be assigned a separate SKU for the additional sizes. It is foreseen that the SIZE database could include literal sizes, if desired.

The SIZE database includes the inventory for each item in the store. The inventory for each size of each item may be determined by looking up the SKU of the item and by subtracting the number of items sold for a particular size, e.g., SOLD00, from the number of items received for that size, e.g., RECEIVE00.

The PRODUCT database includes fields for SKU, SIZE RANGE, DESCRIPTION, VENDOR CODE, LOCATION and other fields that describe or are otherwise pertinent to each item in inventory. The SIZE RANGE field identifies the actual sizes to which the sizes 00 . . . 14 correspond using the SIZE CONVERSION database, as shown in FIG. 3. For example, for a particular SKU which utilizes SIZE RANGE 01, size 04 may represent an actual size 3, whereas for a sneaker using SIZE RANGE 02, size 04 may represent an actual size 9. The DESCRIPTION field contains a brief description of the item, and the VENDOR CODE field contains a vendor number for each vendor, e.g., Nike, Reebok, etc. The LOCATION field specifies the location of the item in the stockroom.

As shown in FIG. 4, in operation, once a customer has selected a sneaker style from the sneaker displays on the sales floor, the customer will show this style to the sales person, who will then determine the size of the customer's foot. The sales person reads the SKU from the selected style and enters this information into sales computer 2 along with the desired size. Sales computer 2 accesses the PRODUCT database to determine the SIZE RANGE used for that SKU, accesses the SIZE CONVERSION database to determine the size 00 . . . 14 that corresponds to the customer's actual size, and accesses the SIZE database to determine whether there is inventory in the store for the selected sneaker style in the desired size. If there is inventory of the selected style, the selected pair of sneakers is retrieved from the stockroom of the store as discussed in more detail below.

If the selected size of the selected style is out of stock, an Alternative Sneaker Selection System is activated. As previously discussed, each item in the store includes a 7-digit SKU number that identifies the item. In a preferred embodiment, the first three digits of the SKU are referred to as the "class" of the item. All items in the store are categorized into classes by the type of item.

One type of class categorization is shown in Table I.

TABLE I

Class No.	Style
127	Men's running shoe
128	Women's running shoe
129	Children's running shoe
140	Men's high-top basketball shoe
150	Children's high-top basketball shoe
160	Women's walking shoe
170	Women's running shoe
200	Sandals
225	Low-top canvas sneakers

It will be appreciated that the various classes may be further sub-categorized to any extent desirable. For example,

alternative

the classes may be sub-categorized by manufacturer. Table II shows a sample of possible class definitions using such categorization.

TABLE II

Class No.	Style
120	Nike men's low-top sneaker
121	Nike men's high-top sneaker
122	Nike children's low-top sneaker
123	Nike high-top children's sneaker
124	Nike women's walking shoe
150	Reebok men's low-top sneaker
151	Reebok men's high-top sneaker
170	LA Gear men's low-top sneaker
171	LA Gear men's high-top sneaker

If desired, the classes of goods could be even further sub-categorized such as by price and product description, e.g. Nike Men's low-top white-on-white budget priced, Nike Men's low-top white-on-white moderate priced, etc.

As shown Table III, a look-up table is included on server computer 4 which groups related classes of goods, i.e., classes of goods that it is believed a consumer would consider as reasonable alternatives to the other classes in the group. For example, assuming that classes 124, 134, and 144 represent white-on-white, black-on-white, and black-on-black men's high-top basketball sneakers respectively, and class 122 represents men's white-on-white low top sneakers, the latter three classes could be grouped as alternatives to the first in the look-up table because consumers interested in white-on-white men's high-top basketball sneakers would likely be interested in black-on-white and black-on-black high-tops and white-on-white low tops as well. Assuming that class 140 represent black-on-black men's low-top sneakers, this class would also be included as an alternative to class 144, i.e., black-on-black men's high-top basketball sneakers, because consumers interested in black-on-black men's high-top basketball sneakers would likely be interested in black-on-black low-tops as well. Other classes of goods, e.g. women's walking shoes, sandals, children's high-top, children's low-top, etc., are similarly grouped.

TABLE III

Class No.	Alternative Classes
124	122, 134, 144
144	124, 134, 140

Once a size and style have been selected by the customer, and it has been determined that the selected item is not in stock, sales floor computer 2 or server computer 4 searches the lookup table of alternative classes, which is preferably a FoxPro™ database, to determine alternative styles for the customer's selection. The alternative styles that are displayed may be determined using any desired search criteria, such as the vendor. In a preferred embodiment, only items from the same vendor are displayed as alternatives.

To perform such a search for alternative items, the computer accesses the INVENTORY Database using the SKU for the selected item, and determines the VENDOR CODE for the item, which represents the name of the vendor of the item. The computer then uses the class number for the selected item and determines related classes from the look-up table. Using the INVENTORY database, the computer then searches for those items in the same class as the selected item with the same VENDOR CODE as the selected

item and for those items in the alternative classes that have the same VENDOR CODE. The resultant list of items is sorted by price.

The sorted list of alternative items appears on the sales floor computer 2 with the cursor positioned nearest to the price of the selected item that was out of stock. Thus, what appears on the sales floor computer is a list of alternative styles by the same vendor sorted by price.

Stored on a mass storage device 10 on server computer 4, in JPEG format, is an image of each item for sale in the store. Mass storage device 10 may be a magnetic disk, magnetic tape, optical media, or any other appropriate storage medium. The video images may be compressed using any appropriate compression software, if desired. Using the data input device on the sales floor computer, e.g., mouse, touch screen, etc., the user may browse the alternative styles listed on the computer screen and view each style. Sales floor computer 2 accesses server computer 4 to retrieve and display an image of the selected item.

In a preferred embodiment, the server computer sorts the alternative styles so that those styles displayed are from the same manufacturer, of the same size, in the same class or related classes, and in the same price range. If desired, the system may be programmed with a preferred or alternative vendors and/or a preferred price so that alternative styles listed are not necessarily from the same manufacturer and are not necessarily in the same price range as the selected item. Also, if desired, styles from any vendor may be displayed, and these may be required to be in the same class/related class and/or in the same price range. The system may also be programmed with, or may prompt the user for, a secondary vendor to search in addition to the vendor of the style that was out of stock. It will be appreciated that various alternatives exist as to how the alternative styles are sorted and/or displayed.

As discussed above, the alternative style selection system is activated only if a selected style is out of stock. If the selected style is in stock, a REQUEST database is accessed which includes fields for REQUEST NUMBER, SKU, VENDOR CODE, SIZE REQUESTED, SALESPERSON, STATUS, DATE, REQUEST TIME, LOCATION, PRICE, TIME DELIVERED, TIME RETURNED and TIME SOLD. When an order for a particular style is entered into sales floor computer 2 by a sales person, information on the SKU, SIZE REQUESTED, and SALESPERSON are entered into the computer. Using this information, the order is assigned a REQUEST NUMBER, and the REQUEST database is updated with the information that the sales person entered and other information from the INVENTORY database for the item ordered. An order or pick ticket is printed at a stockroom computer. A typical pick ticket, as shown in FIG. 5, includes the SALESPERSON, i.e., Beverly P., the name of the vendor, i.e., Nike, Inc., which is derived from the VENDOR CODE, the LOCATION, i.e., 1-44-45, the SKU, the SIZE REQUESTED, i.e., 13, the DATE, the REQUEST TIME, and the REQUEST NUMBER, i.e., 491570. This information is all stored in the REQUEST database.

A stock person takes the pick ticket and retrieves the desired item. The stockroom is equipped with a scanning computer 6, preferably an IBM PC™ compatible computer equipped with a bar code scanner 8, such as the Metrologic™ MS700 or the Symbol Technologies™ LS9100. Before delivering the ordered item to the sales floor, the stock person scans the bar code on the pick ticket, which updates the TIME DELIVERED field. If desired, each stockroom worker may be assigned an ID number or their own

computer, so that the computer stores the ID of the stock worker in a database. In this manner, the duration between the REQUEST TIME and the TIME DELIVERED may be recorded and may be used to measure the productivity of the individual stock person based upon, for example, the average duration that it takes for the worker to retrieve an ordered item.

When the item is either sold or returned to the stockroom, the REQUEST NUMBER is scanned again, at which time the TIME RETURNED or TIME SOLD is recorded in the REQUEST database. If the item is sold, the SIZE and INVENTORY databases are updated to reflect the sale. The REQUEST database also includes a STATUS field which may be either 01, to indicate that an item has been requested, 02 to indicate that a pick ticket has been printed, 03 to indicate that an item has been delivered, 04 to indicate that an item has been returned, 05 to indicate that an item is out of stock, or 06 to indicate that an item has been sold. The status for each item is updated each time the status changes. For example, once a pick ticket has been generated for a requested item, its status will change from 01 to 02.

As shown in FIG. 6, a Request Status Report menu may be accessed by the store manager from which a number of different types of reports may be generated using the REQUEST database on the various aspects of the operation of the sales floor and stockroom. Generally speaking, each of the reports described herein may be generated for any desired period of time. FIG. 7 shows a report that may be generated showing the items that were requested during any desired time frame. As indicated above, when an item is out of stock the Alternative Style Selection System is activated. Nonetheless, when the initial request for the item out of stock is entered into the computer, this request is recorded in the REQUEST database. In this manner, customer interest in out-of-stock items may be recorded. Therefore, even though the SIZE database indicates that an item is out of inventory, the Items Requested Report (FIG. 7) will indicate customer interest in such items for cross-checking, ordering and inventory control purposes.

FIG. 8 shows an Items Delivered Report. Normally, items that are delivered should be either returned or sold within a period of less than one hour or some other predetermined period. The Del. Age column in this table indicates the amount of time elapsed since the item was delivered. A store manager reviewing this report and seeing too large an elapsed time in the Del. Age column for a particular item would attempt to locate the item on the sales floor, since it may have been misplaced or shoplifted. The Del. Lapse column indicates the amount of time that it took the requested item to be delivered, which is useful to ensure a prompt response to customer requests.

FIG. 9 shows an Items Returned Report in which the Return Lapse column indicates the amount of time that the requested item was on the sales floor. FIG. 10 shows an Items Sold Report which details the items that were sold during a selected time period. If desired, the store manager may wish to gauge customer interest in particular items by reviewing the number of requests for a particular item by SKU. FIG. 11 shows a Requests List Searched by SKU Report which details the request activity for a particular SKU, and the outcome of the request, e.g., sold, returned, etc.

FIGS. 12 and 13 are reports that detail the productivity of the sales force. FIG. 12 shows a Sales Person Report, which details the sales of an individual sales person for a selected period of time. FIG. 13 shows a comparison of all of the sales persons and includes, amongst others, columns for Total Items Requested (TI. Req.), Quantity Sold (Qty. Sold),

and Ratio (ratio of Sales to Requests). The Ratio field shows how effective the sales person is at converting requests to sales.

FIG. 14 shows a Time of Requests Analysis Report and FIG. 15 shows a Time of Sales Analysis Report. These reports outline the number of requests and the number of sales made per hour for each day of a selected week. The content of these reports is useful for determining whether staffing is proper for each time period (e.g., the number of people working in the store should reflect the quantity of requests in each time period), and, if many requests are received in the opening or closing hours of the store, whether the store hours should be extended (or reduced if a low volume of request is received).

It will be appreciated that the particular database structure and the particular reports described herein are not intended to limit the scope of the invention since other database structures may be implemented which perform functions identical to those described herein, and different types of reports may be generated using the databases described. More generally, although the present invention has been described in detail with respect to certain embodiments and examples, variations and modifications exist which are within the scope of the present invention as defined in the following claims.

I claim:

1. An alternative item displaying apparatus which comprises:

- a computer workstation for inputting a request for an item for viewing or purchasing the item;
- a computerized inventory database;
- a computer controller for searching the inventory database to determine the availability of the requested item;
- an alternative style database wherein each item is categorized by style and each style is categorized with alternative styles, the computer controller determining the style of the requested item and searching the alternative style database to determine alternative styles for the requested item if the requested item is unavailable;
- means for determining the availability of alternative items having the alternative styles from the inventory database; and

means for interactively displaying such available alternative items or the availability of such alternative items.

2. The alternative style displaying apparatus according to claim 1 wherein the means for determining the alternative items that are available and for interactively displaying such alternative items comprises the computer controller determining from the inventory database the items that are available for each alternative style and interactively displaying the items of the alternative styles or the availability of the items of the alternative styles.

3. The alternative style displaying apparatus according to claim 2 wherein the means for interactively displaying the items of the alternative styles comprises data storage means comprising an image of each item of the alternative styles, the computer controller displaying each desired item of the alternative items on the computer workstation.

4. The alternative style displaying apparatus according to claim 1 wherein the means for interactively displaying such available alternative items comprises data storage means comprising an image of each alternative item, the computer controller displaying each desired alternative item on the computer workstation.

5. A method of determining and displaying alternative items comprising the steps of:

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inputting a request for an item for viewing or purchasing the item;
determining from an inventory database the availability of the requested item;
providing an alternative style database wherein each item is categorized by style and each style is categorized with alternative styles;
determining the style of the requested item and searching the alternative style database to determine alternative styles for the requested item if the requested item is unavailable;

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determining from the inventory database the availability of alternative items having the alternative styles; and selectively displaying or indicating the availability of such available alternative items.

6. The alternative item displaying method according to claim 5 wherein the step of interactively displaying such alternative items comprises retrieving an image of each alternative item from data storage means and displaying each desired alternative item on a computer workstation.

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